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United States
Department of
Agriculture

Soil
Conservation
Service

Montana
Agricultural
Experiment
Station

Bozeman,
Montana

MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow
Forecasts as of
February 1, 1983

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715
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January snowfall low

January snowfall was below average in most areas. Storms that usually cross Montana and deposit considerable snow in the mountains have been tracking north and south of this area. The present snowpack varies from above average in the Red Rock River headwaters of southwestern Montana to well below average amounts in the mountain ranges of central Montana.

The northwestern corner of the state, part of the Madison and Ruby River headwaters and the northern end of the Bighorn Mountains have near average snowpack. However, most of the state has below average levels of water stored in the snow. January temperatures were milder than usual with most valley areas and south facing slopes now bare of snow.

Nearly all of the snow measurement sites will be visited near the first of March to obtain a more complete assessment of pending spring and summer water supplies.

Most runoff below average

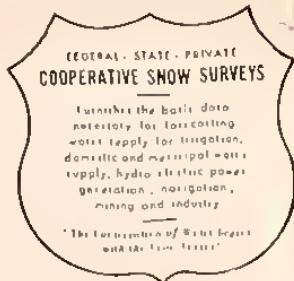
Most streams are forecast to have below average runoff during spring and summer months. The only areas that can expect near average runoff are in the southwest and northwest corners of the state.

Irrigation water supplies could be quite short if present weather patterns continue.

Hopefully, weather for the next few months will return to a more normal moisture flow and serious water shortages will be avoided.

The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, P.O. Box 98, Bozeman, Montana.



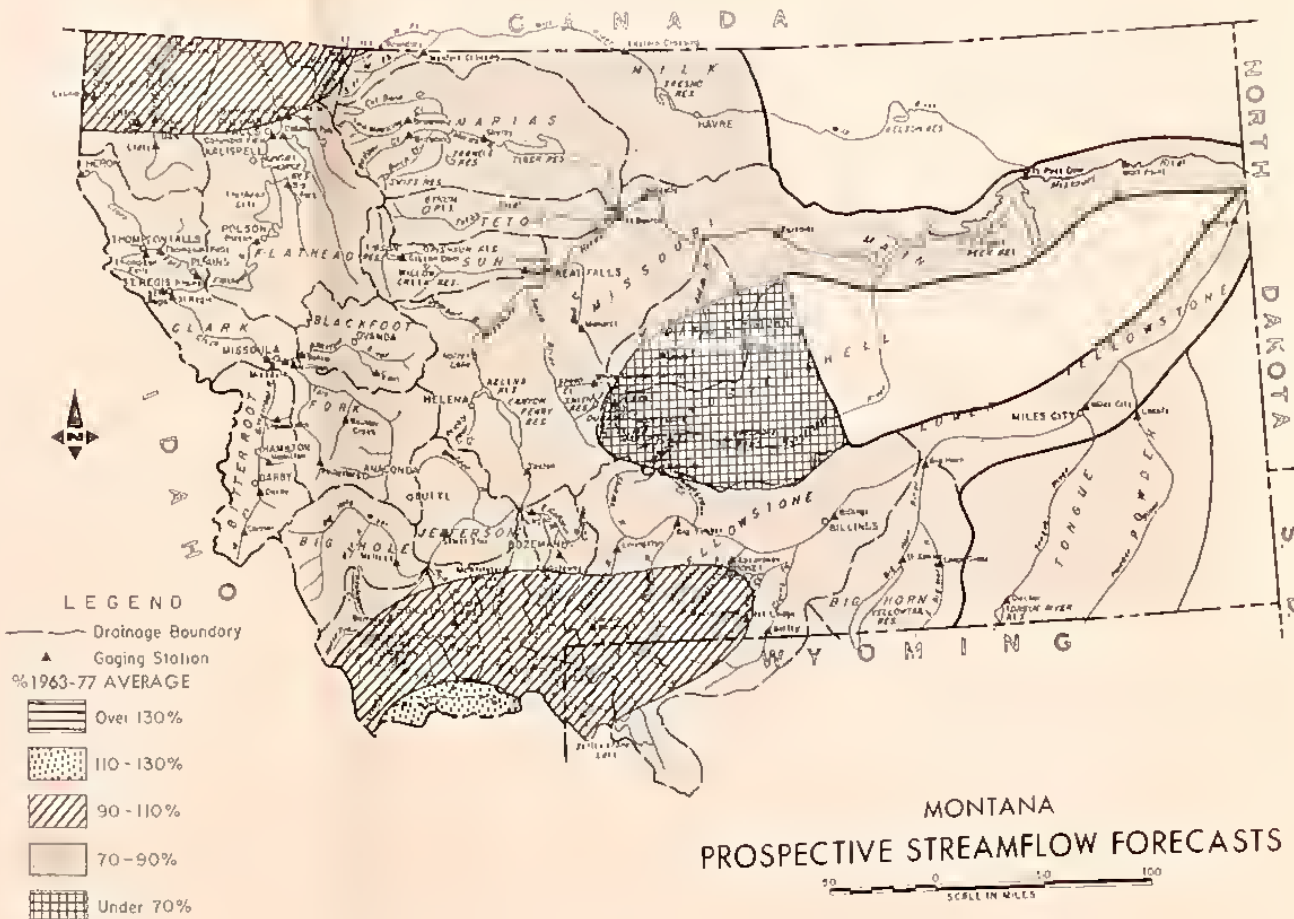
Snow survey program reorganizes

The Snow Survey and Water Supply Forecast function of the Soil Conservation Service is being reorganized. The present 11-state jurisdiction is being consolidated into 5 Data Collection offices. The Montana office will be responsible for snow measurements and field sites in Montana and all of the Missouri and Yellowstone River drainages in northern Wyoming.

Forecasts will continue to be made by the state offices for the next year or two but will eventually be transferred to the new Data Analysis Unit located in Portland, Oregon. In addition to volume forecasts, this Data Analysis group will be developing and implementing hydrograph-type forecasts that will be more useful to all water users.

Interpretations of the water supply, Water Supply Outlook reports and cooperation with local water users will continue to be provided by the Montana Data Collection office. The transfer of all functions is scheduled to take place over the next several years.

Along with the reorganization, there will be more emphasis placed on SNOTEL or automated sites and a reduction in the number of manual measurements. Water users will be contacted as more information becomes available and when plans and schedules materialize.



Yellowstone River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		PAST RECORD		FORECAST		PAST RECORD	
	Thousand Cubic Feet	Percent of Average	Thousand Cubic Feet	Percent of Average	Thousand Cubic Feet	Percent of Average	Thousand Cubic Feet	Percent of Average
PERIOD	April - September				April - July			
YELLOWSTONE RIVER at Corwin Springs	1910	91	2497	2,102	1600	91	1978	1,749
YELLOWSTONE RIVER near Livingston	2220	90	2,471	1840	90			2,048
BOULDER RIVER at Big Timber	370	89	416	345	90			382
STILLWATER near Absarokee (1)	595	90	660	500	90			555
CLARK'S FORK RIVER near Belfry	572	89	644	505	90			564
ROCK CREEK near Red Lodge	Streamflow measurements				discontinued by USGS			
INFLOW COONEY RESERVOIR near Boyd (2)	54.0	84	64.5	44.0	84			91.4
YELLOWSTONE RIVER at Billings	4180	89	5171	4,682	3508	88	4307	3,979
BIGHORN RIVER near St. Xavier (3)	1690	83	2,034	1550	83	1693		1,861
LITTLE BIGHORN RIVER near Hardin	175	89	196	155	89			174
TONGUE RIVER near Decker	225	78	288	205	78			263
YELLOWSTONE RIVER at Niles City (4)	5825	82	7,142	5120	82			6,243
POWDER RIVER at Moorhead	200	79	253	185	79			234
YELLOWSTONE RIVER near Sidney (5)	6340	81	7,806	5530	81			6,805

- (1) Adjusted for storage in Mystic Lake.
- (2) Adjusted for storage in Cooney Reservoir.
- (3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
- (4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.
- (5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION
WITH THE NATIONAL WEATHER SERVICE

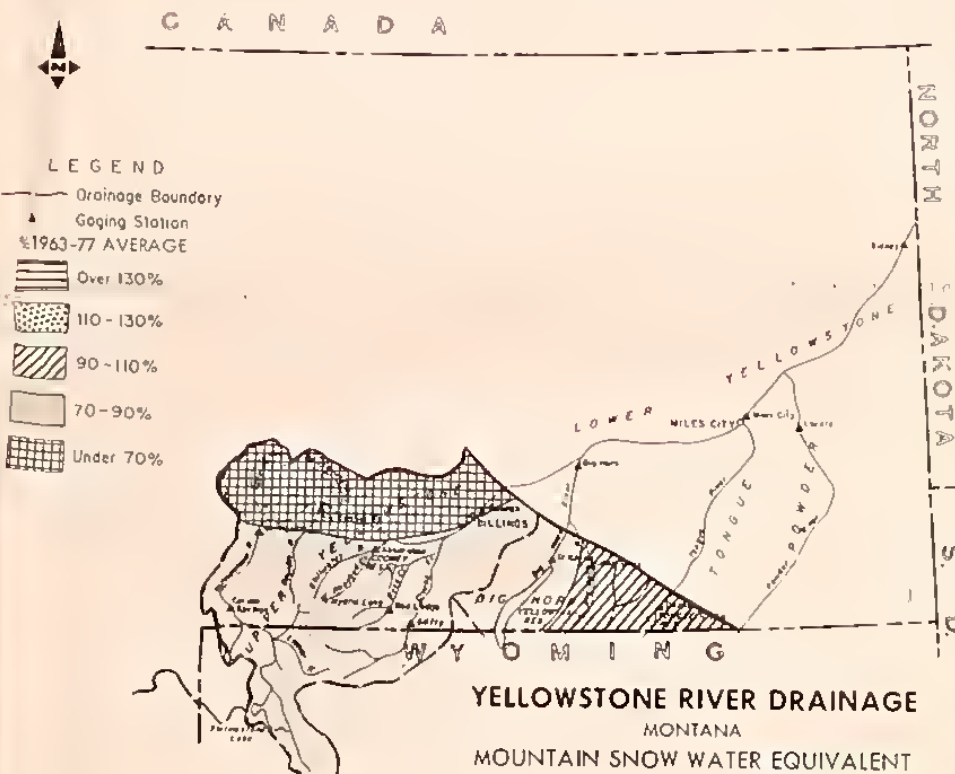
Forecasts below average

Rainfall this spring and summer is forecast to be between 80 and 90 percent of average for most drainages in the Yellowstone River system. However, mountain precipitation must return to near or above average levels or shortages of irrigation water supplies can be expected later this season.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" with respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Yellowstone at Livingston	Avg	Fair
Shields	Fair	Fair
Boulder	Fair	Fair
Sweetgrass - Big Timber	Fair	Fair
Stillwater	Fair	Fair
Rock Creek	Avg	Fair
Clark's Fork	Fair	Fair
Yellowstone above Bighorn	Fair	Fair
Bighorn	Avg	Avg
Little Bighorn	Fair	Fair
Tongue	Fair	Fair
Powder	Fair	Fair
Lower Yellowstone	Fair	Fair



VALLEY PRECIPITATION
JANUARY 1983

Source: NWS
Great Falls, MT

SNOW SURVEY DATA

SNOW February 1, 1983

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR				PAST RECORD			
		Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)
ARCH FALLS	7150	1/24	22	5.6	7.0	0.1			
ASHLEY DIVIDE	4620	1/28	21	4.6	7.0				
ASHLEY LAKE	4000	1/28	17	7.0	5.6				
BARKER PASS	4900	2/01	54	15.0	26.0	20.6			
BARKER PASS PILLOW	4600	2/01	50	17.0	26.6				
BARKER PASS PILLOW	5600	1/28	50	16.7	18.2				
BARKER PASS PILLOW	5600	1/28	50	15.2	15.2				
BARKER PASS PILLOW	8750	2/01	46	11.0	10.7				
BARKER PASS PILLOW	7150	1/27	26	7.0	7.0				
BARKER PASS PILLOW	7150	2/01	50	5.6	6.3				
BARKER PASS PILLOW	8850	2/01	50	6.2	6.2				
BARKER PASS PILLOW	5200	1/29	14	3.5	3.4	6.6			
BARKER PASS PILLOW	5100	1/27	14	3.6		6.0			
BARKER PASS PILLOW	7700	2/01	33	9.4		10.2			
BARKER PASS PILLOW	7950	1/27	92	29.1	35.5	27.4			
BARKER PASS PILLOW	7950	1/27	92	29.1	31.7	25.0			
BARKER PASS PILLOW	7100	1/25	24	6.4	10.7	0.4			
BARKER PASS PILLOW	7100	1/25	50	6.4	12.8	11.7			
BARKER PASS PILLOW	7600	2/01	50	6.4	11.6				
BARKER PASS PILLOW	5000	2/01	46	16.0	20.5	18.7			
BARKER PASS PILLOW	7950	2/01	50	12.7	17.4				
BARKER PASS PILLOW	6670	2/01	50	4.9	6.9				
BARKER PASS PILLOW	7250	1/25	30	12.3	17.3	20.0			
BARKER PASS PILLOW	7250	1/25	50	10.3	16.7	18.0			
BARKER PASS PILLOW	6600	1/27	19	6.0		4.2			
BARKER PASS PILLOW	6450	2/01	50	6.0	9.8	7.7			
BARKER PASS PILLOW	9000	1/31	60	21.1	28.0	26.7			
BARKER PASS PILLOW	9000	1/31	50	19.3	20.5	10.7			
BARKER PASS PILLOW	7600	1/31	18	6.3		7.0			
BARKER PASS PILLOW	7800	2/01	50	6.4	6.2				
BARKER PASS PILLOW	4100	1/28	25	8.4		0.6			
BARKER PASS PILLOW	6200	1/26	17	4.2	2.9	2.8			
BARKER PASS PILLOW	6040	1/27	34	9.6	11.1				
BARKER PASS PILLOW	8600	2/01	50	9.3	11.0				
BARKER PASS PILLOW	7850	1/28	35	10.7	8.8	12.5			
BARKER PASS PILLOW	7850	1/28	35	11.1	8.1	12.7			
BARKER PASS PILLOW	5600	1/25	15	2.4	4.4	4.3			
BARKER PASS PILLOW	5600	1/25	50	3.4	5.1	4.4			
BARKER PASS PILLOW	5200	2/01	50	7.1	10.4	10.5			
BARKER PASS PILLOW	4950	2/01	50	12.4	25.0	10.0			
BARKER PASS PILLOW	7700	1/28	27	6.3	8.6				
BARKER PASS PILLOW	4200	1/28	26	5.0	8.5	8.1			
BARKER PASS PILLOW	6100	2/01	50	6.5	8.5				
BARKER PASS PILLOW	7600	1/26	29	6.0	8.2				
BARKER PASS PILLOW	5200	2/01	50	7.4	10.3				
BARKER PASS PILLOW	8600	2/01	50	11.5	22.0				
BARKER PASS PILLOW	6450	2/01	50	5.2	8.1	8.2			
BARKER PASS PILLOW	5600	1/25	27	10.1	10.9	11.6			
BARKER PASS PILLOW	8100	1/26	38	11.0	15.4	15.6			
BARKER PASS PILLOW	7050	1/25	26	6.4	8.8	8.1			
BARKER PASS PILLOW	7000	2/01	50	8.4	9.0	7.7			
BARKER PASS PILLOW	6400	1/30	24	6.3	9.8	8.2			

SNOW February 1, 1983

DRAINAGE BASIN and/or SNOW COURSE	Elevation	THIS YEAR				PAST RECORD			
		Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)	Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)
EMERY CREEK	4350	1/25	44	12.3	12.4	11.9			
EMERY CREEK PILLOW	4350	1/25	50	12.1	11.0				
FISH CREEK	8000	1/27	28	8.0	9.6				
FISH CREEK PILLOW	9100	2/01	50	20.3	27.2	26.6			
FLATION MOUNTAIN PILLOW	6300	2/01	50	22.7	30.4	35.2			
FLATION MOUNTAIN PILLOW	7500	1/27	24	6.0	9.4	4.3			
FOURTH OF JULY	3650	2/01	28	7.4	7.4				
FRIDAY HILL	4670	2/01	55	18.5	16.8				
FRONIER MEADOWS	4680	1/25	23	6.0	5.5	6.2			
FRONIER MEADOWS PILLOW	6680	1/26	50	5.7	5.9	6.5			
GARVER CREEK	4250	1/28	33	8.2	8.2	0.1			
GARVER CREEK PILLOW	4250	1/28	50	8.2	7.0	8.1			
GIBBONS PASS	7100	1/27	55	17.9	20.4	16.7			
GRAVE CREEK	4300	1/28	47	14.4	11.0	13.2			
GRAVE CREEK PILLOW	4700	1/28	50	15.4	12.0	13.5			
GRIZZLY PEAK	8640	1/28	35	10.4	7.6	10.9			
HARDY CREEK PILLOW	5030	2/01	50	10.6	11.0				
HAWKINS LAKE	6450	1/28	74	24.4	18.8	24.0			
HAWKINS LAKE PILLOW	6450	1/28	50	21.8	10.2	25.1			
HEART LAKE TRAIL	4900	1/28	39	12.5	16.3	12.8			
HEUGEN DAM	6550	1/28	38	9.5	9.4	8.9			
HILL BOARING DIVIDE	5770	1/29	63	20.1	12.3	23.3			
HILLBOARING DIVIDE	4850	1/27	60	19.1	18.5				
HIGHWOOD DIVIDE	5650	1/28	21	5.3		7.5			
HIGHWOOD STATION	4600	1/27	9	2.4		4.2			
HOLBROOK	4530	2/03	25	6.0	11.0	7.7			
HOOD MEADOW	6600	1/26	19	5.2	7.0	8.1			
HOOD MEADOW	6000	1/28	40	33.2	32.2	36.3			
HOOD MEADOW PILLOW	6000	2/01	50	27.6	32.4	36.6			
HOOD MEADOW CREEK	5900	1/28	44	31.2	33.0	32.5			
INTERSAARD	6650	1/27	19	4.1	5.4	6.2			
JOHNSON PARK	6650	1/27	16	3.4	5.0				
KINGS HILL	7500	1/26	26	6.6	10.4	10.4			
KINGS HILL	3720	1/23	3	0.6	2.1	1.1			
KRAFT CREEK PILLOW	4670	2/01	50	9.3	12.4				
LAKEVIEW CANYON	6070	1/29	38	11.4	5.9	0.1			
LAKEVIEW RIDGE	7400	1/28	34	10.4	5.6	0.1			
LAKEVIEW RIDGE PILLOW	7400	2/01	50	11.4	6.6				
LAKEVIEW RIDGE PILLOW	8100	2/01	50	6.8	8.7	7.0			
LICK CREEK	6800	1/26	20	5.1	6.3				
LICK CREEK PILLOW	6800	1/26	50	4.2	7.3	6.3			
LOVE MOUNTAIN	8670	2/01	46	16.4		16.8			
LOVE MOUNTAIN PILLOW	7000	2/01	50	14.8	15.0				
LUBBOCK FLUME	4800	1/29	15	3.9	6.5	6.5			
LUBBOCK FOREST # 3	5650	1/31	17	3.3	7.5	5.9			
LUBBOCK FOREST # 4	4650	1/31	8	2.1	4.4	3.1			
LUBBOCK FOREST # 4	4600	1/31	8	2.4	5.6	3.1			
LUBBOCK HYDROPLQ	4700	1/29	16	4.0	6.5	5.1			
MADISON PLATEAU	7750	1/27	53	16.2	17.1	16.3			
MADISON PLATEAU PILLOW	7750	1/27	50	15.9	18.4	16.3			
MADISON PLATEAU PILLOW	4960	1/29	47	15.1	15.0				
MADISON PLATEAU PILLOW	5250	1/31	38	11.2	15.3	12.1			
MADISON CREEK	6210	1/28	38	7.7	8.2	8.2			
MADISON CREEK PILLOW	6210	1/28	50	6.0	7.4	8.5			

SNOW February 1, 1983

SNOW February 1, 1983		THIS YEAR			PAST RECORD		
DRAINAGE BASIN and/or SNOW COURSE		Date of Survey	Snow Depth (inches)	Water Content (inches)	Water Content (inches)		
NAME	Elevation				Last Year	Average	
WILSON HOLLAND LAKE	6200	1/10	57	21.2	22.8	-	
WALBURN PILLON	5800	2/01	50	5.9	8.2	8.4	
WARRA SPRINGS PILLON	7800	2/01	50	11.7	18.4	-	
WEASLE DIVIDE	5650	1/28	40	25.8	19.7	26.4	
WEST ROSEBUD	7500	1/26	18	5.1	5.4	7.3	
WEST YELLOWSTONE	6700	1/28	34	8.2	7.1	8.9	
WEST YELLOWSTONE PILLON	6700	1/28	50	6.9	7.1	6.6	
WHISKEY CREEK	6800	1/27	49	15.6	16.8	11.1	
WHISKEY CREEK PILLON	6800	1/27	50	11.6	13.1	11.6	
WHITE HILL PILLON	9700	2/01	50	16.5	10.1	12.8	
WILLOW CREEK	6500	1/28	22	4.6	4.1	7.3	
WORTH CREEK PILLON	5060	2/01	50	5.3	6.8	-	
BEAR MOUNTAIN PILLON (10)	5600	2/01	50	40.2	47.2	-	
915 SPRINGS (10)	6500	1/28	47	14.0	16.1	16.2	
CRASH CREEK PILLON (10)	6840	2/01	50	15.4	-	-	
1544th PASS (10)	6200	1/28	45	13.2	13.4	12.0	
1544th PASS PILLON (10)	6200	2/01	50	12.5	13.1	-	
KILGORE (10)	6320	1/28	38	10.9	8.4	8.6	
LODGE PASS (10)	5230	1/27	51	15.2	23.4	21.8	
LODGE CREEK (10)	5250	1/31	67	22.0	21.8	25.4	
LODGE CREEK PILLON (10)	5250	2/01	50	22.3	21.0	-	
MADDER CREEK (10)	6200	1/28	44	13.0	12.5	12.6	
MADDER CREEK PILLON (10)	6200	2/01	50	12.5	12.4	-	
MADDER PASS (10)	6170	1/27	49	16.9	22.2	10.1	
MADDER MOUNTAIN (10)	6720	1/28	79	34.2	28.1	22.1	
MADDER PASS (10)	6880	1/27	36	10.1	10.2	10.5	
MADDER VIEW (10)	6680	1/28	43	13.9	11.2	12.5	
WHITE ELEPHANT (10)	4710	1/28	58	18.8	19.2	13.2	
915 MOUNTAIN (10)	6380	1/26	58	14.9	13.2	15.1	
915 MOUNTAIN PILLON (10)	6380	1/26	50	11.5	12.5	-	
BEAR MOUNTAIN LAKE PILLON (10)	9270	2/01	50	13.4	14.5	-	
WADSWORTH P.S. (10)	7810	1/28	21	4.7	4.4	5.6	
WADSWORTH P.S. PILLON (10)	7880	1/28	50	7.5	5.4	-	
CANYON PILLON (10)	7940	1/28	50	7.2	13.4	-	
EAST ENTRANCE (10)	6960	2/01	30	6.9	12.1	7.6	
EVENING STAR PILLON (10)	9210	2/01	17	3.4	3.7	5.7	
FIVE SPRINGS FALLS (10)	7620	1/27	25	5.1	8.2	6.1	
LAKE CREEK (10)	7780	2/02	27	5.5	7.0	7.0	
LUTHER CREEK (10)	7320	2/02	27	6.1	0.6	8.6	
NORTH BASIN (10)	7500	2/01	18	10.0	11.5	-	
OLD ENTRANCE (10)	7400	2/01	50	14.4	20.1	-	
ROCKY MOUNTAIN PILLON (10)	7610	2/01	33	8.6	13.4	10.0	
SYLVAN PASS (10)	7110	2/01	41	12.2	16.5	15.1	
THUNDER DIVIDE (10)	7990	1/27	62	18.2	26.3	20.1	
THUNDER PASS (10)	9580	1/28	30	3.6	-	-	
THUNDER PILLON (10)	8200	1/28	32	4.6	11.4	9.3	
WADSWORTH (10)	7150	1/28	50	7.6	10.2	-	
WADSWORTH PILLON (10)	8750	1/28	50	0.9	18.2	-	

Average based on 1963-77 period. A - Aerial observation; water content estimated.
 SP - Snow Pylon observations; water content only. * Estimated from SNOEL.

Columbia River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD				THIS YEAR				PAST RECORD			
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year
PERIOD	April - September				April - July				April - June							
KOOTENAI RIVER below Libby Dam (1)	6,840	94	7,017	7,246	5,830	94	5,878	6,178								
FISHER RIVER near Libby	230	85		270	215	85		253								
YAK RIVER near Troy	484	90		537	462	90		514								
KOOTENAI RIVER at Leona (1)	8,700	98	8,643	8,883	7,570	98	7,413	7,727	6,030	98	5,921	6,150				
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)				230	80		360	286	210	81	328	260				
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	45.0	89		50.7	37.0	90		41.2								
FLINT CREEK near Southern Cross (3)	15.2	82	24.6	18.5	12.6	82	20.0	15.4								
FLINT CREEK below Boulder Creek (4)	63.0	81		77.6	49.8	81		61.3								
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	12.0	71	15.9	16.9	11.3	71	15.1	16.0								
MIDDLE FORK ROCK CREEK near Philipsburg	69.7	88		78.8	63.0	89		71.1								
NEVADA CREEK near Finn	16.5	70		23.6	15.2	70		21.8								
BLACKFOOT RIVER near Bonner	800	79		1,017	720	78		920	620	78		794				
CLARK FORK RIVER above Milltown (6)	750	89		843	655	90		730	550	90		613				
CLARK FORK RIVER above Missoula	1,550	83	2,260	1,859	1,375	83	2,038	1,651	1,170	83	1,645	1,408				
WEST FORK BITTERROOT RIVER near Conner (7)	157	84		187	145	84		172								
BITTERROOT RIVER near Darby	515	86		602	475	86		552	412	86		480				
SKALKAH CREEK near Hamilton	51.0	89		57.4	44.6	90		49.8								
BURNT FORK CREEK near Stevensville (8)	34.1	88		38.8	29.8	88		33.6								
BITTERROOT RIVER at Missoula (9)	1,310	85		1,543	1,205	85		1,416	1,040	86		1,211				
CLARK FORK RIVER below Missoula	2,860	84		3,405	2,580	84		3,069	2,210	84		2,618				
CLARK FORK RIVER at St. Regis	3,760	83	5,715	4,521	3,390	83	5,292	4,078	2,900	83	4,309	3,492				
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,850	94		1,969	1,680	94		1,782	1,410	94		1,498				
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,670	87		2,083	1,911	87		1,925	1,750	89		1,544				
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	1,965	85		2,559	2,302	85		2,428	2,159	85		2,034				
FLATHEAD RIVER at Columbia Falls (10)	5,650	89	6,549	6,330	5,200	89	6,080	5,827	4,400	89	4,990	4,964				
SWAN RIVER near Big Fork	570	84		681	500	84		596								
FLATHEAD RIVER near Polson (11)	6,600	89	8,005	7,394	6,060	89	7,323	6,806	5,150	89	5,910	5,779				
CLARK FORK RIVER near Plains (11)	10,600	86	14,103	12,340	9,640	86	12,939	11,222	8,180	86	10,447	9,507				
THOMPSON RIVER near Thompson Falls	235	89		263	210	90		234								
PROSPECT CREEK at Thompson Falls	128	90		143	120	90		133								
CLARK FORK RIVER at Whitehorse Rapids (12)	11,900	86		13,781	10,800	86		12,519	9,150	86		10,633				

- (1) Adjusted for storage in Lake Kootenai.
- (2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- (3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- (4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
- (5) Sum of North Fork Lower Willow Creek near Bill and South Fork Lower Willow Creek near Hall.
- (6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir.
- (8) Adjusted for diversion into Sunset Highway Canal.
- (9) Difference in observed flow Clark Fork above and below Missoula.
- (10) Adjusted for storage in Hungry Horse Reservoir.
- (11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- (12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Bonanza Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

WATER SUPPLY OUTLOOK

STREAM or AREA	Spring Season	Left Season
Tobacco	Avg	Avg
Little Bitterroot	Avg	Avg
Missoula Valley	Avg	Avg
Flint Creek	Fair	Fair
Upper Clark Fork	Fair	Fair
Nevada Creek	Poor	Poor
Blackfoot	Fair	Poor
West-side Bitterroot	Fair	Fair
East-side Bitterroot	Fair	Fair
Bitterroot River	Fair	Fair
Lower Clark Fork	Fair	Fair

Southern areas face shortages

Streams in the southern area are forecast in the 70 to 80 percent of average range, while those in the northern part are expected to have spring and summer runoff in the 85 to 90 percent range. Some shortages of irrigation water supplies can be expected on most streams that do not have stored water. If present weather patterns continue, severe shortages can be anticipated.

Snow better in north

The northwest part of the drainage has received good mountain moisture during January with some locations doubling their water content of last month. More southerly areas had below average snowfall and most of this area has below average water stored in the snowpack.



Clear, cool nights and moisture combine to form frost on vegetation in river bottoms. However, most areas need good snowfall for the next few months to bring snowpack levels up to normal.

Missouri River & Hudson Bay Drainages

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD				THIS YEAR				PAST RECORD			
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year	Thousand Acre Feet	Percent of Average	Left Year	Right Year
PERIOD	April - September				April - July				April - June							
RED ROCK RIVER near Monida (1)	126	114	150	110	118	115	135	103								
BEAVERHEAD RIVER near Grant (2)	175	102	228	171	155	105	194	148								
BEAVERHEAD RIVER at Barratts (2)	225	100		226	197	101		196								
RUBY RIVER near Alder	103	98		105	88.0	99		89.0								
BIG HOLE RIVER near Melrose	680	86		792	630	86		730								
BOULDER RIVER near Boulder	Streamflow measurements				103	discontinued		96.7								
WILLOW CREEK near Harrison	17.3	80		21.5	15.5	81		19.2								
MADISON RIVER near Grayling (3)	532	102	584	523	420	103	456	409								
MADISON RIVER near McAllister (4)	850	96	1024	892	682	97	797	706								
GALLATIN RIVER near Gateway	508	89		572	438	90		488								
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	24.3	80		30.3	21.0	80		26.2								
HYALITE CREEK near Bozeman (6)	38.0	80		47.4	32.9	80		41.0								
GALLATIN RIVER at Logan	535	82		649	458	82		557								
MISSOURI RIVER at Toston (7)	2345	88	3470	2,671	2050	88	3072	2,330								
SHEEP CREEK near White Sulphur Springs	16.2	71	24.5	22.8	13.9	70	21.0	19.8								
SUN RIVER at Gibson Dam (8)	410	71	596	580	370	70	544	529								
BELT CREEK near Monarch	104	71		146	95.0	71		134								
MISSOURI RIVER at Fort Benton (9)	3450	83		4,148	3020	83		3,640								
TWO MEDICINE CREEK near Browning (10)	208	80		259	196	80		244								
BADGER CREEK near Browning	108	81		133	93.0	80		116								
MARIAS RIVER near Shelby	445	77	521	577	415	78	494	532								
MISSOURI RIVER at Virgel (11)	3945	82		4,793	3470	82		4,238								
MISSOURI RIVER near Landusky (11)	4375	84		5,214	3850	84		4,586								
SOUTH FORK MUSSELSHELL RIVER near Delpine	4.1	64		6.4	3.4	62		5.5								
MISSOURI RIVER above Martinsdale	38.0	62		61.5	34.5	60		57.6								
MISSOURI RIVER below Fort Peck Dam (11)	4080	83		4,929	3640	83		4,381								
MILK RIVER at Eastern Crossing	245	88		278												
MILK RIVER at Eastern Crossing (12)	88.8	80		111												
INFLOW LAKE SAKAKAWA, ND (11)	11030	82		13,450	10,040	82		12,239								
SASKATCHEWAN RIVER BASIN																
SWIFT CURRENT CREEK at Sherburne (13)	126	95	133	132	110	96	117	115								
ST. MARY'S RIVER near Babb (13)	470	94		498	405	95		426								

*March-September forecast

- (1) Adjusted for storage in Lima Reservoir.
- (2) Adjusted for storage in Lima and Clark Canyon Reservoirs.
- (3) Adjusted for storage in Hebgen Lake.
- (4) Adjusted for storage in Hebgen Lake and Ennis Lake.
- (5) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
- (6) Adjusted for storage in Middle Creek Reservoir.
- (7) Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
- (8) Adjusted for storage in Gibson Reservoir & diversions.
- (9) Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibbon, Pishkun, Willow Creek & Canyon Ferry Reservoirs.
- (10) Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
- (11) Adjusted for all upstream reservoirs.
- (12) Flow at Eastern Crossing minus St. Mary's Canal.
- (13) Adjusted for storage in Lake Sherburne.

Most runoff poor

Most streamflow is forecast to be 70 to 85 percent of average during the spring and summer months. If present weather patterns continue, even lower flows can be expected. The only areas that can expect near average runoff are the Red Rock, Beaverhead, Ruby and Madison Rivers in southwest Montana and the St. Mary's River with headwaters in Glacier National Park.

Runoff from central Montana is forecast to be around 60 to 70 percent of average based on current snowpack and soil moisture conditions. Irrigation water supplies from streams not having stored water could become quite short unless weather patterns change toward increased moisture over the next three months.

SUMMARY of SNOW MEASUREMENTS

RIVER BASIN and/or SUBWATERSHED	Number of Current Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Left Year	Right Year
Beaverhead	9	107	119
Ruby	2	87	97
Big Hole	8	78	92
Boulder	10	89	85
Jefferson	29	91	100
Madison	16	87	96
Gallatin	15	79	74
Missouri Headwater	60	87	91
West-side Missouri (Toston-Cascade)	7	92	87
Smith-Belt-Arrow	3	60	61
Missouri Main-stem	13	73	72
Teton & Sun	2	67	72
Marias	3	73	78
Marias-Teton-Sun	5	74	76
Judith-Musselshell	1	60	61
Milk	7	78	82
Bear Paw	6	78	69
Missouri (Total)	81	83	86

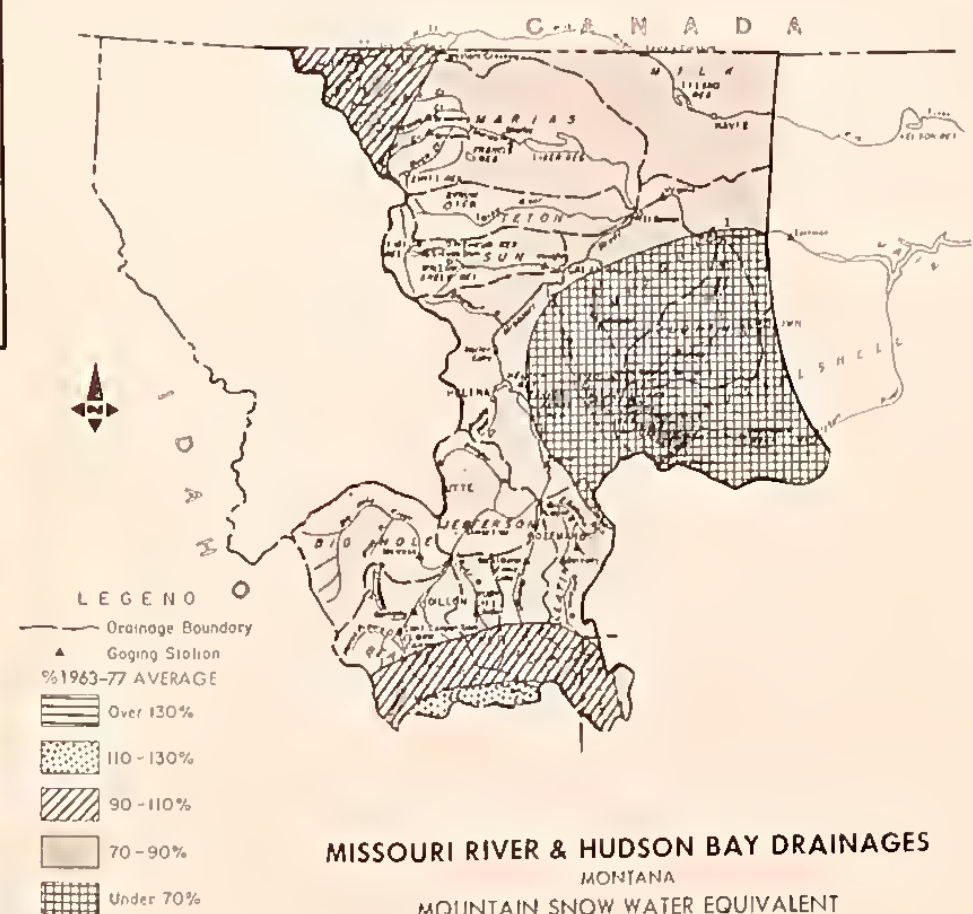
Saskatchewan			
St. Mary's	2	97	94
Bow River in Alberta	--	--	--

Snowpack variable

Snowfall during January was well below average in most areas. Currently, the snowpack varies from above average in the Red Rock River headwaters in southwest Montana to well below average in the smaller mountain ranges of central Montana. Most of the area is below average.

Parts of the Madison, Ruby and St. Mary's River headwaters are near average, but snow water equivalent in most drainages is below average.

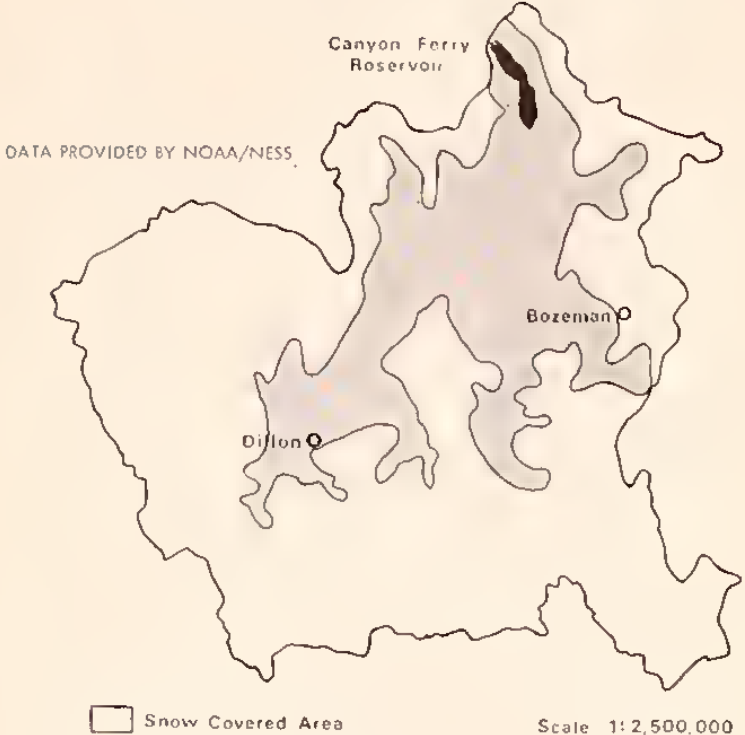
The weather patterns that existed since early January have not brought any significant moisture to either the mountain or valley areas. This period has also been accompanied by moderate temperatures.



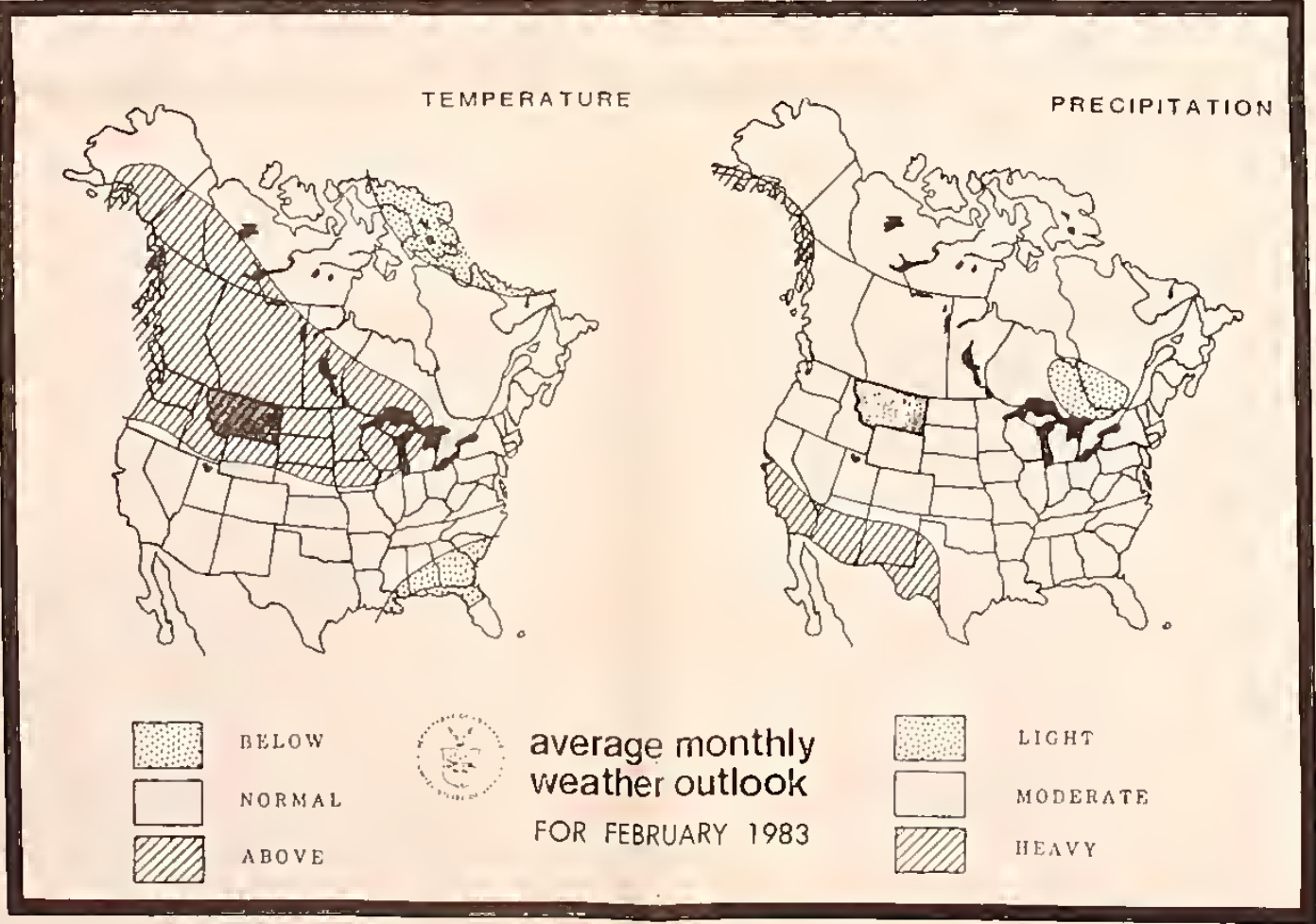
RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH January 31, 1983

Basin or Stream	RESEVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Kootenai	5,748.2	2,732.0	2,717.0	---
Flathead	Hungry Horse	3,451.0	3,062.0	2,381.0	2,341.0
	Flathead Lake	1,791.0	973.8	887.0	1,253.0
	Camas (4)	45.2	29.9	20.0	20.7
	Mission Valley (8)	100.3	43.2	22.4	37.0
Clark Fork	Georgetown Lake	31.0	28.1	15.0	27.3
	Lower Willow Creek	4.9	1.4	1.2	1.6
	Nevada Creek	12.6	---	---	5.0
	Noxon Rapids	334.6	321.1	320.1	315.2
Bitterroot	Painted Rocks	31.7	---	---	17.6
	Como	34.9	---	7.8	11.3
MISSOURI					
Beaverhead	Lima	84.0	49.9	25.6	39.5
	Clark Canyon	257.2	169.0	158.5	135.9
Ruby	Ruby	38.8	26.0	---	24.3
Madison	Hebgen Lake	377.5	274.2	274.6	241.5
	Ennis Lake	41.0	32.1	31.4	35.3
Gallatin	Middle Creek	8.0	3.7	3.5	3.3
Missouri	Canyon Ferry	2,043.0	1,762.0	1,590.0	1,661.0
	Hauser & Helena	61.9	63.0	61.9	60.2
	Lake Helena	10.4	10.9	10.4	9.9
	Holter Lake	81.9	81.0	81.4	70.8
	Fort Peck Lake	18,910.0	16,110.0	14,180.0	15,570.0
Smith	Smith River	10.6	8.0	6.0	6.7
	Newman Creek	12.4	8.7	10.3	---
Musselshell	Bair	7.0	6.1	2.8	4.4
	Martinsdale	23.1	16.3	10.8	9.9
	Deadman's Basin	72.2	---	---	46.8
Sun	Gibson	99.1	58.6	44.5	41.4
	Willow Creek	32.2	23.9	22.8	21.2
	Pishkun	32.0	20.1	19.8	16.5
Marias	Lower Two Medicine	11.9	---	---	6.2
	Four Horns	19.2	---	---	13.2
	Swift	30.0	13.5	7.6	14.3
	Lake Frances	111.9	85.5	77.8	70.9
Milk	Elwell (Tiber)	1,347.0	691.0	505.7	540.8
	Beaver Creek	3.5	3.0	0.8	1.5
	Fresno	127.2	13.3	32.2	65.4
	Nelson	66.8	46.7	28.8	43.3
HUDSON BAY					
St. Mary's	Lake Sherburne	64.3	34.2	14.6	20.1
YELLOWSTONE					
Stillwater	Hystic Lake	21.0	6.3	6.1	10.0
Clark's Fork	Cooney	27.4	16.0	---	14.6
Tongue	Tongue River	68.0	26.4	18.1	32.5
Bighorn	Bighorn Lake	1,356.0	965.5	882.5	536.0

SATELLITE SNOW COVER



MISSOURI RIVER BASIN Above Canyon Ferry Dam		
DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 14, 1982	81	5290
November 1982	96	4300
November 24, 1982	95	4380
December 24, 1982	100	3800
January 18, 1983	76	5540
January 25, 1983	71	5770



AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

- GOVERNMENT AGENCIES**
- Canada**
- Department of the Environment
 - Atmospheric Environment Service
 - Water Management Service
 - British Columbia Ministry of Environment
 - Inventory and Engineering Branch, Hydrology Section
 - Alberta Environment
 - Technical Services Division
- Federal**
- Department of the Army - Corps of Engineers
 - Department of Agriculture - Forest Service
 - Department of Commerce - Soil Conservation Service
 - Department of Commerce - National Environmental Satellite Service
 - Department of Commerce - National Weather Service
 - Department of Interior - Bureau of Indian Affairs
 - Department of Interior - Fish and Wildlife Service
 - Department of Interior - Geological Survey
 - Department of Interior - National Park Service
 - Department of Interior - Bureau of Reclamation
 - Department of Energy - Bonneville Power Administration

- STATE AGENCIES**
- Montana Conservation Districts
 - Montana Department of Fish, Wildlife and Parks
 - Montana Department of Natural Resources and Conservation
 - Montana State University - Agricultural Experiment Station
 - University of Montana - School of Forestry
- PRIVATE ORGANIZATIONS**
- The Anaconda Company
 - Big Sky of Montana
 - Butte Water Company
 - Flathead Valley Community College
 - Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.